WHAT IS CLAIMED IS:

1. A system for performing measurements over a network, the system comprising:

nodal members forming a nodal network between which one-way measurements are performed over asymmetrical paths, wherein the measurements are performed at the Internet Protocol layer, wherein the number of nodal members in the nodal network is scaleable; and

wherein the measurements include packet ordering data for received packets that is defined using a minimal longest ascending subsequence algorithm.

2. The system of Claim 1, wherein the packets that are in the minimal longest ascending subsequence are considered in order.

3. The system of Claim 1, wherein the packets that are not in the minimal longest ascending subsequence are considered out of order.

4. The system of Claim 1, wherein the nodal members are used as measurement points and have synchronized timing systems.

5. The system of Claim 4, wherein the nodal members support Network Time Protocol synchronization and Global Positioning System synchronization.

6. The system of Claim 1, wherein the one-way measurements performed by nodal members at the Internet Protocol layer provide cross application and cross platform comparable measurements.

7. The system of Claim 1, wherein the system utilizes a vector based measurement system to achieve service-based, comparable measurements.

8. The system of Claim 7, wherein the vector based measurement system defines a vector by an IP source, an IP destination, and service type.

9. The system of Claim 1, wherein the nodal members perform processing of measurement data.

10. The system of Claim 1, wherein the nodal members implement a processing algorithm on raw measurement data recorded for each measurement period, and wherein the processing algorithm compacts the raw measurement data.

11. The system of Claim 1, wherein the nodal members include multiple on-board processors, enabling one processor to handle management processes and another processor to handle measurement processes.

12. The system of Claim 1, wherein the nodal members are functional without requiring a transmission control protocol session with a service daemon.

13. A method for performing measurements over a network, the method comprising:

performing one-way measurements between nodal members over asymmetrical paths, wherein the measurements are performed at the Internet Protocol layer in a scalable environment;

processing data produced from the one-way measurements between nodal members;

transmitting the processed measurement data from the nodal members to a database; and

analyzing the processed measurement data, wherein the measurements include packet ordering data for received packets that is defined using a minimal longest ascending subsequence algorithm.

14. The system of Claim 13, wherein the packets that are in the minimal longest ascending subsequence are considered in order.

15. The system of Claim 13, wherein the packets that are not in the minimal longest ascending subsequence are considered out of order.

16. The method of Claim 13, wherein the performing of one-way measurements between nodal members is achieved by transmitting measurement packets with CQOS headers between nodal members.

17. The method of Claim 13, wherein the processing of the measurement data produced from the one-way measurements between nodal members compacts the measurement data.

18. The method of Claim 13, wherein the nodal members perform the processing of measurement data.

19. The method of Claim 13, wherein the nodal members implement a processing algorithm on raw measurement data recorded for each measurement period, and wherein the processing algorithm compacts the raw measurement data.

20. The method of Claim 13, wherein the nodal members are used as measurement points and have synchronized timing systems.

21. The method of Claim 20, wherein the nodal members support Network Time Protocol synchronization and Global Positioning System synchronization.

22. The method of Claim 13, wherein the nodal members include multiple on-board processors, enabling one processor to handle management processes and another processor to handle measurement processes.

23. The method of Claim 13, wherein the nodal members are functional without requiring a TCP session with the service daemon.

24. A system for performing measurements over a network, the system comprising:

a nodal network that includes multiple nodal members between which one-way measurements are performed over asymmetrical paths, wherein the measurements are performed at the Internet Protocol layer, wherein the number of nodal members used as measurement points in the nodal network is scaleable, and wherein the measurements include packet ordering data for received packets that is defined using a minimal longest ascending subsequence algorithm;

a database, wherein the database stores measurement data recorded by the nodal members;

a workstation operatively associated with the database, wherein the workstation facilitates system configuration and reporting of measurement data; and

at least one service daemon, and wherein the service daemon interfaces with the nodal network and the database, instructs the nodal members to create vectors, obtains vector configuration information from the database, and processes results data transmitted from the nodal members to the database.

25. The system of Claim 24, wherein the packets that are in the minimal longest ascending subsequence are considered in order.

26. The system of Claim 24, wherein the packets that are not in the minimal longest ascending subsequence are considered out of order.

27. The system of Claim 24, further comprising an application server that interfaces between the workstation and the database for system configuration and results display.

28. The system of Claim 24, wherein the workstation includes a user interface that is alterable without modifying underlying system architecture.

29. The system of Claim 24, wherein the workstation utilizes a browser based interface to provide system reports and management functions to a user from any computer connected to the Internet without requiring specific hardware or software.

30. The system of Claim 24, wherein the system implements an access protocol that is selectively configurable to allow third party applications to access the system.

31. The system of Claim 24, wherein CQOS protocol is a non-processor intensive, non-bandwidth intensive protocol for transmitting processed, compacted measurement data.

32. The system of Claim 24, wherein measurement data from each measurement period is sent from the nodal members to the database via CQOS protocol.

33. The system of Claim 24, wherein the nodal members communicate with each other using CQOS protocol.

34. The system of Claim 24, wherein the database is SQL compliant, and stores vector configuration information and results measurement data to allow generation of true averages in response to user defined parameters.

35. The system of Claim 24, wherein the system utilizes a vector based measurement system to achieve service-based, comparable measurements.

36. The system of Claim 24, wherein the system utilizes a vector based measurement system that defines a vector by an IP source, an IP destination, and service type.

37. The system of Claim 24, wherein the nodal members implement hardware time stamping.

38. The system of Claim 37, wherein each nodal member includes an output buffer, and wherein during the hardware time stamping process, header information and data information fill the output buffer before a time stamp is applied to the output buffer.

39. The system of Claim 24, wherein nodal members in the nodal network are capable of user-defined, customizable groupings for area-specific measurement reporting.

40. The system of Claim 24, wherein the system utilizes a measurement packet having a format that includes Ethernet header, IP header, optional IP routing options, UDP/TCP header, payload, and CQOS header.

41. The system of Claim 40, wherein checksums are calculated on the measurement packets for payload, IP header, UDP/TCP header, and CQOS header.

42. The system of Claim 24, wherein the system facilitates user-definable bandwidth allocation for measurement traffic.

43. The system of Claim 24, wherein each nodal member automatically calculates a rate at which measurement packets are generated, such rate based upon the number of vectors, packet size, and bandwidth allocation.

44. The system of Claim 24, wherein the system performs highly accurate measurements at a high sampling rate.

45. A method for performing measurements over a network, the method comprising:

performing one-way measurements between nodal members over asymmetrical paths, wherein the measurements are performed at the Internet Protocol layer in a scalable environment, and wherein the measurements include packet ordering data for received packets that is defined using a minimal longest ascending subsequence algorithm;

processing data in the nodal members produced by the one-way measurements between nodal members;

transmitting the processed measurement data from the nodal members to a database via at least one service daemon that interfaces with the nodal network and the database, wherein the at least one service daemon instructs the nodal members to create vectors, obtains vector configuration information from the database, and processes results data transmitted from the nodal members to the database; and

providing for system management capabilities and measurement data analysis via the workstation.

46. The system of Claim 45, wherein the packets that are in the minimal longest ascending subsequence are considered in order.

47. The system of Claim 45, wherein the packets that are not in the minimal longest ascending subsequence are considered out of order.

48. The method of Claim 45, further comprising an application server that interfaces between the workstation and the database for system configuration and results display.

49. The method of Claim 45, wherein the service daemon performs automatic error recovery to retrieve missing measurement data when measurement data is lost in transmission.

50. The method of Claim 45, wherein the workstation includes a user interface that is alterable without modifying underlying system architecture.

51. The method of Claim 45, wherein the workstation utilizes a browser based interface to provide system reports and management functions to a user from any computer connected to the Internet without requiring specific hardware or software.

52. The method of Claim 45, wherein the system implements an access protocol that is selectively configurable to allow third party applications to access the system.

53. The method of Claim 45, wherein CQOS protocol is a non-processor intensive, non-bandwidth intensive protocol for transmitting processed, compacted measurement data.

54. The method of Claim 45, wherein measurement data from each measurement period is sent from the nodal members to the database via CQOS protocol.

55. The method of Claim 45, wherein the nodal members communicate with each other using cQOS protocol.

56. The method of Claim 45, wherein the database is SQL compliant, and stores vector configuration information and results measurement data to allow generation of true averages in response to user defined parameters.

57. The method of Claim 45, wherein the system utilizes a vector based measurement system to achieve service-based, comparable measurements.

58. The method of Claim 57, wherein the vector based measurement system defines a vector by an IP source, an IP destination, and service type.

59. The method of Claim 57, wherein vectors in the vector based measurement system are capable of disablement without deletion from the database.

60. The method of Claim 45, wherein the nodal members implement hardware time stamping.

61. The method of Claim 60, wherein each nodal member includes an output buffer, and wherein during the hardware time stamping process, header information and data information fill the output buffer before a time stamp is applied to the output buffer.

62. The method of Claim 45, wherein nodal members in the nodal network are capable of user-defined, customizable groupings for area-specific measurement reporting.

63. The method of Claim 45, wherein the system utilizes a measurement packet having a format that includes Ethernet header, IP header, optional IP routing options, UDP/TCP header, payload, and CQOS header.

64. The method of Claim 63, wherein checksums are calculated on the measurement packets for payload, IP header, UDP/TCP header, and CQOS header.

65. The method of Claim 45, wherein the system facilitates user-definable bandwidth allocation for measurement traffic.

66. The method of Claim 45, wherein each nodal member automatically calculates a rate at which measurement packets are generated, such rate based upon the number of vectors, packet size, and bandwidth allocation.

67. A system for performing network measurements utilizing a readiness test, the system comprising:

a nodal network that includes multiple nodal members between which one-way measurements are performed at the Internet Protocol layer;

a measurement database;

a workstation, wherein the workstation provides a user interface for system configuration and reporting of measurement data;

an application server, wherein the application server interfaces between the database and the workstation for system configuration and results display; and

a service daemon, wherein the service daemon interfaces the nodal network and the database;

wherein a transmitting nodal member performs a readiness test to ensure the willingness of a receiving nodal member to accept measurement traffic before the transmitting nodal member begins to transmit measurement traffic to the receiving nodal member; and

wherein the measurements include packet ordering data for received packets that is defined using a minimal longest ascending subsequence algorithm.

68. The system of Claim 67, wherein the packets that are in the minimal longest ascending subsequence are considered in order.

69. The system of Claim 67, wherein the packets that are not in the minimal longest ascending subsequence are considered out of order.

70. The system of Claim 67, wherein the readiness test comprises:

broadcasting an Address Resolution Protocol request to a gateway/local host in order to obtain its physical hardware address;

pinging the gateway/local host;

pinging the receiving nodal member;

performing a traceroute to the receiving nodal member; and

performing a Go/No Go test using a CQOS protocol, wherein the CQOS protocol is a non-processor intensive, non-bandwidth intensive protocol for nodal members to communicate with each other.

71. The system of Claim 70, wherein the Go/No Go test is performed by a transmitting nodal member requesting and obtaining permission from a receiving device to transmit measurement traffic before the transmitting nodal member transmits the measurement traffic,

thereby ensuring protection against unwanted measurements being made on nodal members and against measurement traffic being sent to a non-nodal member receiving device.

72. The system of Claim 67, wherein the readiness test verifies linkage and reachability of nodal members before measurements are performed without creating unnecessary duplication of effort in the network.